Basin Study Work Group: Crooked River Subgroup Meeting
November 12, 10:00 AM – 12:00 PM
Prineville City Hall, 387 NE 3rd St, Prineville, OR 97754

Attendance

Phil Chang, U.S. Senator Merkley's Office
Kate Fitzpatrick, BSWG Process Co-Coordinator
Jeremy Giffin, OR Water Resources Department
Brett Golden, Deschutes River Conservancy
Brett Hodgson, OR Department of Fish and Wildlife
Mike Kasberger, Ochoco Irrigation District
Eric Klann, City of Prineville
Bonnie Lamb, OR Department of Environmental Quality (by phone)
Peter Lickwar, US Fish and Wildlife Service
Jeff Perreault, citizen
Kimberly Priestley, WaterWatch of Oregon
Betty Roppe, City of Prineville
Garry Sanders, Crooked River Watershed Council (by phone)
Gail Snyder, Central Oregon LandWatch
Bob Spateholts, Portland General Electric
Mike Tripp, Trout Unlimited (by phone)
Kelsey Wymore, Deschutes River Conservancy

Mary Orton of The Mary Orton Company facilitated the meeting. Anne George from TMOC also attended.

Agenda

The group used the following agenda as a guide during the meeting:

Subgroup Purpose: Recommend to the BSWG Steering Committee what should be included in the Plan of Study with regard to the Crooked River basin.

1. Welcome: Betty Roppe, Chair
2. Introductions
3. Overview and approval of agenda: Mary Orton, Facilitator
4. Previous agreements of the Subgroup: Kate Fitzpatrick, BSWG Process Co-Coordinator
   - See Attachment 1, "Basin Study Requirements"
   - See Attachment 2, "Previous Agreements of the Crooked River Subgroup"
   - To be done (suggested):
     - Refine water supply issues to be included in the Plan of Study
     - Refine instream demand issues to be included in the Plan of Study
     - Develop solutions or alternatives ("adaptation and mitigation strategies") to be included in the Plan of Study
5. Refine water supply issues to be included in the Plan of Study (Attachment 1, #1): Kate Fitzpatrick, BSWG Process Co-Coordinator
   Possible recommendation to the BSC for inclusion in the Basin Study:
   - That the Plan of Study include budget for Reclamation to update the water supply modeling for the Crooked River. *(Purpose: resolve the issues with the two existing models: IFIM and that developed by Bob Main.)*
   - That the Plan of Study include budget for Reclamation to do a climate change analysis for changing supply in the Crooked River. This is a requirement of the Basin Study.
6. Refine instream water demand issues to be included in the Plan of Study (Attachment 1, #1) – report from the Crooked Instream Technical Committee: Brett Golden, Deschutes River Conservancy in behalf of the group
   - See Attachment 3 for a report from the Committee.

7. Develop structural and non-structural options to improve operations and infrastructure to supply adequate water in the future to be included in the Plan of Study (Attachment 1, #3): Kate Fitzpatrick, BSWG Process Co-Coordinator
   - See Attachment 4 [Attachment 6 of these notes] for a draft list of adaptation and mitigation strategies (alternatives, solutions) to be considered in the Plan of Study.
8. Next steps
   - Action items and parking lot
   - Report to BSWG
   - Next meeting of the Crooked Subgroup
   - Agenda for next meeting
9. Meeting evaluation

Introductions; Overview and approval of agenda

Betty welcomed everyone to the meeting. Everyone present and on the telephone introduced himself or herself.

Mary noted that the agenda was very ambitious and while the group will probably not be able to finish everything today, it gives them a road map for future work together.

Previous agreements of the Subgroup

Kate gave an overview of the BSWG study and BOR and State of Oregon grants. She reviewed the elements of the Basin Study (Attachment 1).

Kate reviewed "Previous Agreements of the Crooked River Subgroup" (see Attachment 2). The group already had agreed on priority questions via email after the January meeting. In April, the Subgroup recognized the municipal and agricultural demands that are already well-defined, and tasked an instream technical group with refining certain questions related to instream flow demand. Kate noted that the technical group would report under #6 on today's agenda.

Jeff Perreault asked why the technical groups were meeting separately and why they are needed. Kate answered that over the last decade, there hasn't been consensus on instream flow targets in the lower Crooked River, and originally, the Crooked River Subgroup as a whole was going to address this question together. Then, in April, the subgroup appointed a technical group to refine instream demand questions and report to the Subgroup. Jeff asked why he had not been notified of the meetings of the technical group, and was told that he had become involved after those meetings had occurred.

Kate emphasized that the Subgroup would recommend to the BSWG Steering Committee what alternatives and solutions for the Crooked River basin need to be analyzed in the Plan of Study. She explained that she would give feedback from the Subgroup to GSI (BSWG Technical Co-Coordinator) as they draft Plan of Study tasks for BSWG Steering Committee consideration, and she hopes the Subgroup will become specific soon about Plan of Study tasks. The target for a completed Plan of Study is end of March 2015. The group acknowledged that the Habitat Conservation Plan was occurring at the same time as the BSWG process, and each needs to be aware of the other.

Kate summarized that she recommended that the Crooked River Subgroup should focus on

- Refining the water supply issues to be included in the Plan of Study,
- Refining the instream demand issues to be included in the Plan of Study, and

- Developing solutions or alternatives ("adaptation and mitigation strategies") to be included in the Plan of Study.

There was no objection to that suggestion.

Refine water supply issues to be included in the Plan of Study

Kate explained that there have been efforts to understand how much water is available of the unallocated storage in Prineville Reservoir. The Subgroup had looked at two modeling efforts, one by ODFW and one by Bob Main for Ochoco Irrigation District, each developed for different purposes, but there is not consensus that one or the other should be used. There is also a Bureau of Reclamation MODSIM model. She asked if it would be useful, during the Basin Study, for Reclamation to examine and refine the model(s), and suggested this was something the Subgroup could recommend for the Plan of Study.

The definitions of the models were clarified as follows:

- IFIM: An analysis of how flow relates to fish habitat. PHabSim is part of this model.
- Bob Main's model: A surface water model that shows the effect of different flow releases on reservoir levels.
- MODSIM: A water accounting model that uses stream gage data to reflect actual historic use. Use can be allocated to different users.
- ODFW Model: This was a hybrid. It allocated certain volumes of water or flow in different reaches to predict what it would provide in terms of fish habitat and how it would affect storage in the reservoir.

Discussion included:

- It would be helpful to have a model that everyone was comfortable with.
- I'm concerned about using different models for the HCP, the legislation, and the BSWG. These processes have three different purposes and the purpose needs to be clear.
- The different models are not dueling, but rather are looking at the same thing from a variety of different points of view. They can be different and complementary.
- MODSIM was used to determine how much water was available at what times. It could be used to determine the impact on fish.
- Inputs influence the outputs and we need to agree with the inputs to get what we want.
- The Bob Main model was developed before there was a MODSIM model. It was to determine the impact on water supply if a certain amount of water was released from Bowman into the Crooked River. Would they run out of water? Will there be enough for next year? It examined, over the last 70 years, how many times they have run out of water, to determine if there was enough water for irrigation and recreation in the reservoir.
- MODSIM, developed by Reclamation, is flawed because it operates on a monthly average time step. Because the Crooked is a flashy system, a daily time step (such as in Bob Main's model) would characterize the system more accurately.
- MODSIM currently cannot run on a monthly time step, but Riverware (Reclamation's new model) can, and may be available for use.
- Oregon operates under a one-fill system – the reservoir is filled once in a water year. However, Bob Main's model included re-filling the reservoir. Once he had arrived at the limit of the water right, if water were entering the system in a flashy way, the model refilled the reservoir, modeling actual used instead of paper water rights.

- The Crooked River subgroup needs to decide if Reclamation is the right agency to do the flow modeling if we cannot agree to one of the models that are already presented.
- People are disagreeing with the assumptions that go into the model. If a small group were to get together to resolve the assumptions and inputs, the modelers can make the inputs clear to ensure everyone is comfortable with them.
- The end game is alternatives for managing water to meet multiple demands. A critical piece is understanding the supply. I assume a major part of this is the influence of climate change, so Reclamation may address this in the course of their climate change work.
- If the Subgroup chose to recommend this to the Steering Committee, a small group of people could work with Reclamation on the inputs.

After further discussion, the group **agreed by consensus** to the following:

- That the Crooked River Subgroup recommends to the BSWG Steering Committee that the Plan of Study include budget for the Bureau of Reclamation to update the water supply modeling for the Crooked River, with involvement of the Crooked River Subgroup and requesting the involvement of Jonathan La Marche from OWRD. The Crooked River Subgroup will work with Reclamation to agree on assumptions and inputs. *(Purpose: Resolve the issues with the two existing models: MODSIM and that developed by Bob Main.)*

Kate noted that the second recommendation for inclusion in the Plan of Study from the agenda – "That the Plan of Study include budget for Reclamation to do a climate change analysis for changing supply in the Crooked River" – is a requirement of the Basin Study.

Refine instream water demand issues to be included in the Plan of Study: Report from the Crooked Instream Technical Committee

Kate handed out the Summary Report of the Crooked Instream Technical Committee (see Attachment 3), the detailed report from the Technical Committee (see Attachment 4) and "Crooked River: Life Histories of Steelhead, Chinook and Redband" (see Attachment 5).

Brett Golden said the technical group met twice and had numerous email conversations. They discussed what fish were in the system, what reaches the fish were using, and where and when there existed flow-limited factors and whether there was anything to be done about them. They discussed that in some locations, during some times of year, and for some species, the limits are due to natural conditions.

The technical group agreed on the following draft objectives on which he requested feedback:

1. Provide the conditions necessary for steelhead to access Ochoco and McKay Creeks and for those creeks to support all life stages of steelhead; and
2. Provide the conditions necessary for steelhead to access the Crooked River between the Crooked River Feed Canal (RM 57.2) and the North Unit Pumps (RM 14.1) and for those reaches to support all life stages of steelhead.

Brett Hodgson said, and Peter Lickwar agreed, that he supported the objectives. He said while the importance of Chinook should be noted, the objectives would not hamper Chinook reintroduction into the system. Mike Kasberger said he would have to make sure these objectives were not contradictory to the HCP mitigation efforts. Other discussion included:

- Steelhead were prioritized because we would make the greatest impact in the easiest way right now by using steelhead.
- We can look at how much it would cost to study both species and then reevaluate it.

- We will need to prioritize eventually, but we should include Chinook in the objectives.
- Steelhead is prioritized because they are listed as threatened. Stream function aspects and changes of flow management could also benefit habitat for migratory cues.
- The reaches to study for Chinook and steelhead will be different.

After further discussion, the group **agreed by consensus** to the following direction to the technical committee:

- Change the objectives as follows:
  1. ~~Provide~~ Identify the conditions necessary for steelhead to access Ochoco and McKay Creeks (upstream and downstream migration) and for those creeks to support all life stages of steelhead; and
  2. ~~Provide~~ Identify the conditions necessary for steelhead to access the Crooked River between the Crooked River Feed Canal (RM 57.2) and the North Unit Pumps (RM 14.1) (upstream and downstream migration) and for those reaches to support all life stages of steelhead.
- Add Chinook objectives and develop a separable scope and budget.
- Consider adding water quality objectives for the reach below the dam.

Brett Hodgson and Peter volunteered to write a third and fourth objective, to include Chinook and its corresponding reaches and information, and send them out to the technical group. Once the technical group is agreed, they will be sent to the full Subgroup in one month (by mid-December) for approval.

Develop structural and non-structural options to improve operations and infrastructure to supply adequate water in the future to be included in the Plan of Study

Kate said she took the liberty to draft a "straw man" proposal for possible mitigation and adaptation strategies to be addressed during the Basin Study (see Attachment 6). She invited revisions, and noted that the main purpose of the straw man is to keep the Subgroup focused on next steps necessary for the Plan of Study. She said that there were empty lines for additions from Subgroup members, and that other lines could be deleted. She emphasized that at some point, the Subgroup needed to come to agreement on what alternatives for the Crooked River should be considered during the trade-off analysis part of the Basin Study.

Betty said she sees the straw man as a wish list and not something that is set in stone. She also noted they could be expensive even though they may be ideal, and that funding would be crucial.

Next Steps

Mary noted that the Steering Committee, at its meeting this afternoon, would consider canceling its scheduled December 16 meeting. If that happens, December 16 may be the date of the Deschutes Subgroup meeting. After this announcement, the Crooked River subgroup agreed to a December meeting.

Meeting Evaluation

Mary Orton invited everyone to provide one piece of feedback about what they liked about the meeting, indicated below with a plus symbol (+), and one piece of feedback about what they would like to change for the next meeting, indicated with a delta symbol (Δ). Below are the results of this exercise. Each check mark (✓) indicates that someone endorsed a previously mentioned item.

+	Δ
+ It was a good meeting.	Δ We were rushed. ✓
+ It was a perfect meeting.	Δ We should meet for a longer time – two and one-half hours?
+ We made progress on priorities. ✓	Δ Meet more often.
+ We made some agreements.	Δ There was some difficulty understanding the models – add definitions to the agenda (anticipate this is needed). ✓
+ We moved forward.	Δ We should receive documents in advance.
+ Everyone participated.	Δ Be careful on words chosen.
+ People opened up. They talked and shared their apprehensions. ✓	Δ We need a better call-in system. ✓
+ Great communication. ✓	Δ Everyone should be here in person. ✓
+ Great discussion.	Δ (comment) There is some confusion; this is a study, we are not implementing. ✓
+ The handouts were helpful.	Δ Nothing. ✓✓✓✓
+ We are gaining some understanding of the process.	
+ I'm glad I said something.	
+ There was a good level of respect and thoughtfulness.	
+ We added Chinook.	

Adjournment

Betty thanked everyone for coming. She said she would prefer to have more frequent meetings and she is looking forward to the next meeting.

Attachment 1: Basin Study Requirements

Basin Studies address basin-wide efforts to evaluate and address the impacts of climate change. Funding is available for comprehensive water studies that define options for meeting future water demands in river basins in the western United States where imbalances in water supply and demand exist or are projected.

Each Basin Study will include four basic components:

1. Projections of water supply and demand within the basin, or improvements on existing projections, taking into consideration the impacts of climate change.

2. Analysis of how existing water and power infrastructure and operations will perform in the face of changing water realities such as population increases and climate change.

3. Development of structural and nonstructural options to improve operations and infrastructure to supply adequate water in the future.

4. A trade-off analysis of the options identified and findings and recommendations as appropriate. Such analysis simply examines all proposed alternatives in terms of their relative cost, environmental impact, risk, stakeholder response, or other attributes common to the alternatives. The analysis can be either quantitative or qualitative in measurement.

(Sources: http://www.usbr.gov/WaterSMART/bsp and http://www.usbr.gov/WaterSMART/bsp/require.html, accessed September 10, 2014)

Attachment 2: Previous Agreements of the Crooked River Subgroup

The group agreed to the following priority questions for the Basin Study:

- How much water is available for multiple uses in different water years (wet, average, dry)?
- How do we best manage this water to benefit prioritized fish species and water quality and balance multiple needs?. There was subsequent discussion at the April meeting that we want to understand instream needs (demands) before we start balancing multiple needs (solutions). These are two separate elements of the Basin Study.

The group agreed that they would – after the proposal is submitted – **define highest-priority species and reaches**. They also agreed that much research data exists already that should be referenced. In preparation for the Plan of Study, the group will also discuss **Adaptation and Mitigation Strategies they feel are important for further analysis** in the Basin Study.

(Consensus via email after the January 22, 2014 meeting)

The group agreed to **convene a subgroup focused on instream demands** that would use a process like the one used by the Deschutes Instream Subgroup to answer the following three questions:

- What are our instream priorities?
- What reaches and times of year are important for those priorities?
- What flow is needed for those priorities in those reaches? (perhaps answered through Plan of Study tasks)

(Consensus, April 23, 2014 meeting)

The group agreed to move forward **with conditions as they are** while addressing supply and demand. While addressing solutions, the group agreed they might need to **consider the HCP and legislation.** Throughout, they agreed they would be careful not to undermine the pending Crooked River legislation.

(Consensus, April 23, 2014 meeting)

Attachment 3: Summary Report: Crooked Instream Flow Technical Committee

Purpose of Flow Technical Committee:

At its April 23, 2014 meeting, the Crooked River Subgroup convened a technical committee to answer three questions related to instream demands:

1. What are our instream priorities?
2. What reaches and times of year are important for those priorities?
3. What flow is needed for those priorities in those reaches? If we don't know how much flow is needed, what additional questions do we need to ask and/or include in the Plan of Study?

Draft Objectives

The committee identified the following priority objectives related to instream needs in the lower Crooked River:

3. Provide the conditions necessary for steelhead to access Ochoco and McKay Creeks and for those creeks to support all life stages of steelhead; and
4. Provide the conditions necessary for steelhead to access the Crooked River between the Crooked River Feed Canal (RM 57.2) and the North Unit Pumps (RM 14.1) and for those reaches to support all life stages of steelhead.

The committee proposed that, given limited funds to invest, the Crooked River subgroup prioritize steelhead over Chinook or redband, recognizing that Chinook would be much more challenging to manage for and that improvements for steelhead should benefit redband. Following this proposal, these study objectives only relate to steelhead, only include areas where flow may be a limiting factor to one or more steelhead life history stages, and only include areas with information needs identified by the committee.

Draft Questions for Study

The committee drafted specific questions related to two broad categories of information needs. These categories include:

Flow-temperature relationships

Committee members identified stream temperature as a potential limiting factor for steelhead in the Crooked River and its tributaries. They drafted questions related to identifying whether stream temperatures limited specific life history stages in specific reaches and whether changes in stream flow would reduce stream temperatures. They proposed that a study team could use existing data and models to answer these questions.

Flow-habitat relationships

Committee members identified physical habitat as a flow-related limiting factor for steelhead in the Crooked River and its tributaries. They drafted questions related to multiple life stages across several reaches. Committee members agree that some flow-habitat information already exists, and suggested that additional information in some reaches (particularly in the PV1 reach) would be valuable. These questions may relate to specific habitat attributes or more broadly to stream function.

Requested Action

The committee asks the Crooked Subgroup to:

1. Adopt the draft objectives developed by the committee; and
2. Task the committee with:
    a. Refining the specific study questions,
    b. Specifying scopes of work to answer those questions (including identifying where and how the group can use existing information),
    c. Developing budgets associated with those scopes of work, and
    d. Recommending priority tasks for the Plan of Study that incorporate those questions, scopes of work, and budgets, with a projected cost not to exceed $60,000[1].

[1] This is for ballpark use only. Once Plan of Study elements are proposed, there will be a better sense of study needs and what kind of prioritization and balancing will be needed. There also may be value in identifying needs in excess of this amount, with the understanding that other funds may need to be sought.

Attachment 4: Report from the Instream Flow Technical Committee

Draft Objectives

Draft objectives for the lower Crooked River for the purposes of the Basin Study:

Objective 1. Provide the conditions necessary for steelhead to access Ochoco and McKay Creeks and for those creeks to support all life stages of steelhead; and

Objective 2. Provide the conditions necessary for steelhead to access the Crooked River between the Crooked River Feed Canal (RM 57.2) and the North Unit Pumps (RM 14.1) and for those reaches to support all life stages of steelhead.

These study objectives only relate to steelhead, only include areas where flow may be a limiting factor to one or more steelhead life history stages, and only include areas with information needs identified by the committee.

Draft Questions

Priority 1

1. What tributary stream flows, if any, are required to trigger outmigration from Ochoco and McKay Creeks? Are those flows present?
2. What Crooked River stream flows, if any, are required in to trigger inmigration in the Crooked River and to allow for upstream passage to Ochoco and McKay Creeks? Are those flows present?
3. Are temperatures in Ochoco Creek adequate for the following life stages, at the following times of year, and in the following locations? If not, what is the flow-temperature relationship for them? How much flow would be required to maintain adequate temperatures?

Life Stage	Months	Locations
Spawning	April – May	Ochoco Reservoir to mouth
Egg incubation and emergence	May - June	Ochoco Reservoir to mouth

Priority 2

4. Are temperatures in the Crooked River adequate for the following life stages, at the following times of year, and in the following locations? If not, what is the flow-temperature relationship for them? How much flow would be required to maintain adequate temperatures?

*Note: this reflects the timing identified by participants.

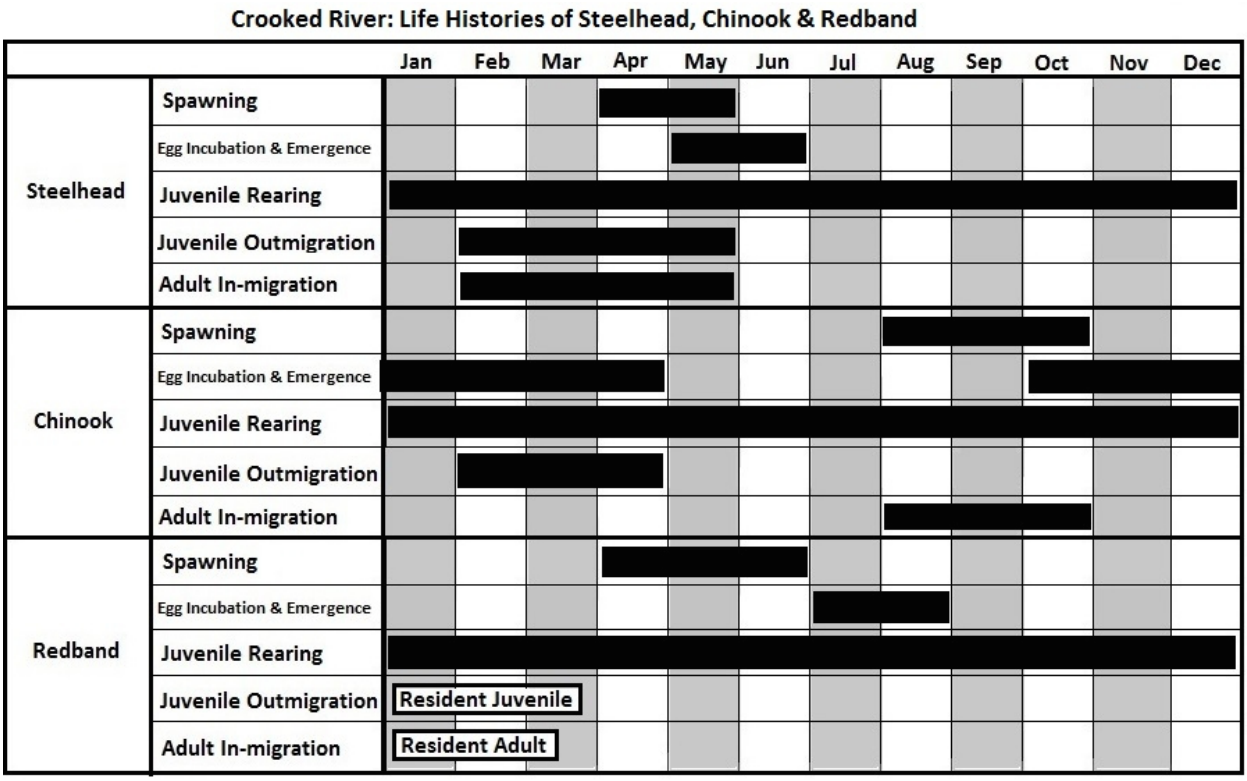
Life Stage	Months	Locations
Spawning	April – May	Ochoco Creek confluence to North Unit Pumps
	April – May	North Unit Pumps to Osborne Canyon
Egg incubation and emergence	May - June	Crooked River Feed Canal to Ochoco Creek confluence
	May - June	Ochoco Creek confluence to North Unit Pumps
	May - June	North Unit Pumps to Osborne Canyon
Juvenile rearing	Year-round	Crooked River Feed Canal to Ochoco Creek Confluence
	Nov – Feb*	Ochoco Creek confluence to North Unit Pumps
	Year-round	North Unit Pumps to Osborne Canyon

5. Are stream flows adequate to provide habitat in the Crooked River for the following life stages, at the following times of year, and in the following locations? If not, what is the flow-habitat relationship for them? How much flow would be required to maintain adequate habitat conditions?

Life Stage	Months	Locations
Egg incubation & emergence	May - June	Crooked River Feed Canal to Ochoco Creek confluence
Juvenile rearing	Year-round	Crooked River Feed Canal to Ochoco Creek confluence

6. Do springs currently cool egg incubation areas or rearing areas in the Crooked River between the North Unit Pumps and Osborne Canyon? If so, how will increased May-August stream flows affect stream temperatures and habitat suitability through this reach?

Attachment 5: Crooked River: Life Histories of Steelhead, Chinook and Redband



Attachment 6: Possible Adaptation and Mitigation Strategies

Draft Structural & Nonstructural Options to Improve Water Supply

Action	Benefit	Existing Information	Information Needed	Estima-ted Cost
Release uncontracted storage for fish and wildlife and groundwater mitigation	Instream flows; muni	Modeling to understand options to balance instream water needs with existing uses	Updated modeling?	
Instream leasing	Instream; ag	Ten years experience with the program	Analysis of policies/pricing to optimize	low
McKay Creek water rights switch	instream; ag	Sufficient	*	zero
City of Prineville Wetlands	instream; muni; public	Sufficient; project designed and funded	*	zero
NUID Water Supply Program	muni; ag; instream	Project ongoing; pilot mitigation project in process	Information from Deschutes district plans will add value	zero
Move OID diversion downstream	instream; ag	Feasibility engineering and cost analysis	*	zero
Pipe OID system	instream; ag	System Optimization Review	cost-benefit by phases	low
New storage: structural	instream; ag; muni		Analysis of enhancing existing storage; new sites	med?
New storage: nonstructural (i.e., enhancing wetland and floodplain capacity)	instream; ag; muni	CRWC plans or emerging plans in McKay Creek and lower Crooked River?	*?	
Assessment of Legal/policy barriers	all	Most barriers known and identified	documentation; further analysis?	low

**Where information is not needed, we may just need a review of existing plans and incorporation of actions into tradeoff analyses.*